ASSESSING THE INTEGRATED PLAN FOR A NEXT GENERATION AIR TRANSPORTATION SYSTEM

Statement of

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Committee on Technology Pathways

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Good afternoon, Mr. Chairman, and members of the committee. Thank you for the opportunity to testify before you today. My name is Michael Hudson. I retired as Vice Chairman of Rolls-Royce North America in 2002. I appear before you today in my capacity as chair of the National Research Council's committee assessing the JDPO's Integrated Plan for a Next Generation Air Transportation System. The National Research Council is the operating arm of the National Academy of Sciences, National Academy of Engineering, and the Institute of Medicine of the National Academies, chartered by Congress in 1863 to advise the government on matters of science and technology.

In early 2004, NASA requested that the National Research Council (NRC) establish the Committee on Technology Pathways: Assessing the Integrated Plan for a Next Generation Air Transportation System under the auspices of the Aeronautics and Space Engineering Board. The committee was charged with assessing the first edition of the NGATS Integrated Plan, which the JPDO submitted to Congress in December 2004 (see <www.jpdo.aero>). The assessment committee met with staff from the JPDO and some of the integrated product teams (IPTs) that the JPDO has formed. Our committee's report was released in October of 2005.

Transforming the air transportation system is essential to meet the needs of the traveling public and other system users, to sustain the nation's economic growth, and to help the United States maintain continued global aviation leadership. The Federal Aviation Administration (FAA) Reauthorization Act of 2004, which directs the secretary of transportation to establish the Next Generation Air Transportation System (NGATS) Joint Planning and Development Office (JPDO), creates the opportunity for all federal agencies with a stake in aviation to bring their resources to bear on this critical issue. Previous initiatives to modernize the U.S. aviation system have enjoyed limited success. The JPDO's multiagency approach affords new possibilities for overcoming the substantial barriers inherent in the significant undertaking of developing and deploying an NGATS. The secretary of transportation and the FAA administrator have both been supportive of the JPDO through public statements and through direct involvement in the Senior Policy Committee, which oversees the work of the JPDO and provides interdepartmental coordination.

The assessment committee considers the timely preparation of the first edition of the Integrated Plan to be a positive first step. Even so, substantial improvements in the Integrated Plan and the method by which it is being implemented are essential.

The next edition of the Integrated Plan should clearly state that increased demand is the key driver that mandates implementation of NGATS. The JPDO should redirect its efforts to focus on development of a systematic, risk-based approach for achieving the primary objective, which is to resolve demand issues and increase capacity, while also satisfying enabling, interrelated requirements for safety, security, environmental effects, consumer satisfaction, and industrial competitiveness. The Integrated Plan should make

sure that secondary objectives, such as alignment of existing interagency efforts, do not overshadow the primary objective of meeting increased demand.

The JPDO should define operational concepts to satisfy future demand by phase of operation:

- airport operations
- terminal area operations
- en route and oceanic operations

Operational concepts for airport operations will be needed for flight operations during approach, landing, and takeoff; for ground operations; and for curb-to-gate processing of passengers within the terminal.

Operational concepts for terminal area operations will be needed for flight operations between the last en route waypoint and the initial approach waypoint at major airports. This includes multicenter operational concepts for terminal areas that are so close together that responsible traffic control centers should take a collaborative approach to traffic flow management.

Operational concepts for en route and oceanic operations will be needed for aircraft operating between the terminal areas at their points of origin and destination, including aircraft operating in oceanic airspace. Operational concepts at this level should also encompass national traffic flow management.

Even though the current IPTs have multiagency membership, they are functioning primarily as experts in specific disciplines rather than as cross-functional, integrated, multidisciplinary teams organized to deliver specific products that will improve operational capabilities of the air transportation system. To better support the core goal of meeting increased demand in each phase of operation, the JPDO's IPT structure should be realigned and simplified. All of the current IPTs (except for the Master IPT) should be disbanded and replaced with three new IPTs, one for each of the above operational concepts. Safety, security, weather, and other elements of the existing IPTs should be embedded in each of the three new IPTs, as appropriate, and the JPDO should establish goals related to cost, schedule, and level of performance that can be quantified using appropriate figures of merit.

Adequate support for all core technologies and processes that will be included in NGATS is crucial to validate the Integrated Plan. In particular, the NASA administrator should continue—and the Senior Policy Committee and the JPDO should advocate for continuation of—research on core NGATS technologies and processes. Likewise, the JPDO itself must receive adequate resources. The members of the Senior Policy Committee should ensure that the federal agencies they direct or represent allocate funding and staff to (1) provide the JPDO with the resources it needs to define NGATS and draw up an appropriate implementation plan and (2) ensure departmental and agency research in civil aeronautics is consistent with plans developed by the JPDO and

endorsed by the Senior Policy Committee to enable and implement new operational concepts.

The first edition of the Integrated Plan has little to say about implementation other than to acknowledge that the IPTs will need to address implementation and transition issues. Successful implementation of NGATS requires an Integrated Plan that does the following:

- Clearly addresses the needs of the traveling public, shippers, and other system users, which vary with fluctuations in the economy.
- Establishes a source of stable funding suitable for development, implementation, and operation of NGATS, including capital improvements.
- Proposes reforms in governance and operational management that assure accountability and limit the effect of traditional external influences. The interests of individual stakeholders should be balanced with the common good in a way that expedites the deployment of optimal technologies and procedures and achieves the primary goal of meeting increased demand.
- Defines an NGATS that efficiently interfaces with the rest of the global air transportation system.

The secretary of transportation, as chair of the Senior Policy Committee, and the FAA administrator, as a member of the Senior Policy Committee, should help the JPDO accomplish each of the above goals by, for example, supporting jointly funded, collaborative research to define NGATS operational concepts suitable for global implementation. They should also lead the development of a proposal to adequately fund the development, implementation, and operation of NGATS.

The assessment committee's overall guidance is summarized in the following recommendation:

The secretary of transportation, the FAA administrator, the rest of the Senior Policy Committee, and the JPDO should invigorate development, implementation, and operation of the Next Generation Air Transportation System, especially with regard to the development of core technologies and processes, as follows:

- Focus the work of the JPDO on development of a systematic, risk-based approach for achieving the primary objective, which is to resolve demand issues and increase capacity while also satisfying enabling, interrelated requirements for safety, security, environmental effects, consumer satisfaction, and industrial competitiveness.
- Restructure the JPDO as a product-driven organization with three coordinated operational concepts and three IPTs focused on (1) airport operations, (2) terminal area operations, and (3) en route and oceanic operations (plus the Master IPT for systems integration and oversight).
- Consistently provide the JPDO and its IPTs with strong, fully involved leadership and program management capabilities, along with more full-time staff.

- Draw up a plan to establish a viable source of stable funding and a governance structure suited to the Next Generation Air Transportation System.
- Undertake a more vigorous effort to collaborate with foreign governments and institutions, to include jointly funded, collaborative research to define operational concepts suitable for global implementation.

Thank you for the opportunity to testify. I would be happy to take any questions the Committee might have.

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